ROUND LAKE MITIGATION AREA

PERMITTEE-RESPONSIBLE MITIGATION PLAN
MVN-2010-1148-CY

February 10, 2011

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TABLE OF CONTENTS

Round Lake Mitigation Area
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ATTACHMENTS

Attachment A: Figures
Attachment B: Title Report
Attachment C: WVA Calculations
Attachment D: Financial Assurance and Long-Term Management Fund Calculations
Attachment E: Preliminary Wetland Jurisdictional Determination

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I. Introduction

The following report represents a Permittee-Responsible Mitigation (PRM) Plan prepared in accordance with the *Compensatory Mitigation for Losses of Aquatic Resources; Final Rule* published in the Federal Register (Volume 73 Number 70) on April 10, 2008 (effective date June 9, 2008). The PRM will establish the Round Lake Mitigation Area (Property) which will compensate for losses of aquatic resources due to impacts associated with Department of the Army Permit MVN-2010-1148-CY. The permit applicant is Big River Industries (Permittee) and the party responsible for compensatory mitigation is Delta Land Services LLC (Contractor). The Contractor will be responsible for implementation, performance and long-term management of the mitigation project at the Property per 33 CFR 332.3 (l).

II. Location

A. Property Location

The Property is located at latitude 30.912797° N and longitude 91.673053° W (approximate center point) in Pointe Coupee Parish, Louisiana (Figures 1 and 2, Attachment A). This location includes a portion of Section 4 within Township 2 South, Range 8 East. The Property is located approximately 2.5 miles north of Innis, Louisiana.

B. Property Ownership

The Property owner (Owner) is Capps Properties LLC of Lettsworth, Louisiana. The Owner has owned the Property since January 2008.

C. Property Legal Definition

The perimeter of the Property is defined by the following coordinates in decimal degrees (North American Datum of 1983):

Latitude 30.924197° N and Longitude 90.677944° W
Latitude 30.919733° N and Longitude 90.677786° W
Latitude 30.909600° N and Longitude 90.667878° W
Latitude 30.908067° N and Longitude 90.669550° W
Latitude 30.906686° N and Longitude 91.667792° W
Latitude 30.906675° N and Longitude 91.667547° W
Latitude 30.905742° N and Longitude 91.667642° W
Latitude 30.905778° N and Longitude 91.671139° W
Latitude 30.906169° N and Longitude 91.671253° W

Latitude 30.906447° N and Longitude 91.671214° W
Latitude 30.907156° N and Longitude 91.670269° W
Latitude 30.907850° N and Longitude 91.670425° W
Latitude 30.906192° N and Longitude 91.677900° W
Latitude 30.917628° N and Longitude 91.678294° W
Latitude 30.917681° N and Longitude 91.678586° W
Latitude 30.917858° N and Longitude 91.678789° W
Latitude 30.918089° N and Longitude 91.678933° W
Latitude 30.918300° N and Longitude 91.679000° W
Latitude 30.918931° N and Longitude 91.679150° W
Latitude 30.919219° N and Longitude 91.679303° W
Latitude 30.920275° N and Longitude 91.679872° W
Latitude 30.921103° N and Longitude 91.678517° W
Latitude 30.921483° N and Longitude 91.678533° W
Latitude 30.921831° N and Longitude 91.678742° W
Latitude 30.922356° N and Longitude 91.678706° W

D. Recorded Liens, Encumbrances, Easements, Servitudes or Restrictions

Title to the Property has been documented through a title insurance policy issued on January 16, 2008 for the approximately +835 acre property in which the project is located (Attachment B). A multiple indebtedness mortgage in favor of Peoples Bank and Trust Company of Pointe Coupee exists on the Property. This mortgage will be subordinated to the conservation servitude. A servitude granted in favor of Transcontinental Gas Pipeline Corporation with a 30-foot width for permanent use. Although this area will not be subordinate to the conservation servitude, the continued existence and operation of the pipeline will not adversely affect the restoration and protection of the Property which are contrary to this PRM plan. Additionally, no acreage within the pipeline right-of-way is being utilized as mitigation acreage.

III. Objectives

A. Aquatic Resource Type and Functions Impacted and Restored

The goal of the project is to mitigate for 91.9 acres of impacts within the Lower Grand watershed (USGS 08070300) associated with DA Permit MVN-2010-1148-CY. The impact and proposed mitigation habitat type is bottomland hardwoods as defined by LDWF NHP (2004). Bottomland hardwoods habitat consists of forests that typically occupy broad floodplain areas flanking large river systems. Typical bottomland hardwood systems exhibit an alternating hydrologic regime of wet and dry periods that follow seasonal flooding events. Bottomland hardwoods provide important ecosystem functions including maintenance of water quality, productive habitat for a variety of aquatic and wildlife species, regulation of flooding, and stream recharge.

The wetlands at the impact site are a series of gradual highs and lows throughout the impact site. The vegetative community is uniform with subtle changes between uplands and wetlands. The wetlands are characterized as bottomland hardwood forest cutover where the predominate vegetation includes: American elm (*Ulmus americana*), sugarberry (*Celtis laevigata*), water hickory (*Carya aquatic*), overcup oak (*Quercus lyrata*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and sweet pecan (*Carya illinoensis*). The majority of the expansion site was logged approximately six to seven years ago leaving approximately 15% of the overcanopy trees. The majority of the trees on this site reach an average height of 20 to 30 feet with diameter at breast height (dbh) of 9 to 11 inches. Additionally, the site has approximately 10% coverage by invasive and nuisance species such as Chinese tallow (*Sapium sebiferum*) and paper mulberry (*Broussonetia papyrifera*). The predominate ground cover includes goldenrod (*Solidago canadensis var. scabra*), blackberry (*Rubus spp.*), elderberry (*Sambucus nigra* ssp. *canadensis*), blue mist flower (*Eupatorium coelestinum*), camphor pluchea (*Pluchea camphorata*), lizard's tail (*Saururus cernuus*), smartweed (*Polygonum hydrpiperoides*), jointed flatsedge (*Cyperus haspan*), and bog hemp (*Boehmeria cylindrical*). The aforementioned and all scientific plant names are from the Natural Resource Conservation Service (NRCS 2010[1])

There are no anticipated indirect, secondary, and/or cumulative impacts by the proposed project. As noted above, water management on the extension property will be similar to the existing mining operations where rainfall, surface water runoff, and ground water infiltration are directed to an existing Louisiana Pollutant Discharge Elimination System (LPDES) outfall discharging to Bayou Poydras. Bayou Poydras is a tributary of Choctaw Bayou. Continuation of discharge into Bayou Poydras as a result of mining the proposed extension area will not result in any additional significant impacts to water quality or water flow in the Bayou Poydras, Bayou Choctaw, Bayou Chalpin or Bayou Cholpe drainage systems. As expected, best management practices will be implemented to prevent impacts to wetlands and surface waters not otherwise authorized by the Corps.

The mitigation project will restore and protect a forested wetland ecosystem through vegetative and hydrologic restoration. This will be accomplished through the re-establishment of 110.3 acres of bottomland hardwood forest. The mitigation habitat is depicted in Figure 3 (Attachment A) and as follows:

Mitigation Type	Feature	Acreage
Re-Establishment	Bottomland Hardwood	110.3
Forest Inclusion	Bottomland Hardwood	1.1
Non-mitigation	Unimproved Access Roads	1.1
Non-mitigation	Pipeline Right-of-Way	0.7
Total	--	**113.2**

The amount of mitigation was determined through analysis of the impact site and the Property utilizing the Wetlands Value Assessment (WVA) model (Attachment C). The WVA resulted in a management potential of 0.77 per acre of impact and a management potential of 0.65 per acre of restoration. The result of the model indicates that approximately 1.2 acres of mitigation at the Property would offset every acre of impact (0.77/0.65).

B. Watershed Contributions

The project is located in the Atchafalaya watershed (USGS 08080101). This watershed contains a large portion of Pointe Coupee Parish and is adjacent to the impacted watershed (USGS 08070300). The Atchafalaya Watershed is defined by the Atchafalaya River which is the largest distributary stream of the Mississippi River. It is the largest river basin in North America containing 838,000 acres of forests, and lakes. The basin is estimated to be inhabitated or utilized by over 250 species of birds, 45 species of mammals, 40 reptilian species, and 20 species of amphibians. Nine of these species are federal and state designated endangered or threatened species. Threats to the watershed are identified as human induced and natural hydrological changes, sedimentation, hypoxic conditions, and invasive species (LDNR ABP 2010). The mitigation project will contribute to the overall health of the basin through reduction of sedimentation, increasing wildlife habitat and control of invasive species.

IV. Site Selection

The primary factors considered during site selection included location of the site in relation to the permitted activity involving wetland impacts and the ecological and technical suitability as related to the likelihood of a successful restoration/mitigation project. The restoration of bottomland hardwood forest within the 113.2-acre mitigation area will provide additional wetland functions and values which are currently not being realized. These include expanding the size of existing bottomland hardwood forests; increasing habitat for the threatened Louisiana black bear and neotropical migrants; and a reduction of nonpoint source runoff by retiring existing agricultural land from production.

The construction work required to develop the mitigation area is routine in nature and feasible, consisting primarily of vegetative plantings, elimination of artificial drains where feasible and restoration of natural drainage systems. The relatively low landscape position, the documented presence of hydric soils, and the NRCS designation of "prior-converted wetlands" implies that minimal soil work will be required for restoration and provides a high likelihood of successful re-establishment.

V. Site Protection Instrument

The Owner shall burden the Property with a perpetual conservation servitude in accordance with Louisiana law, La. R.S. 9:1272. The conservation servitude shall be signed and filed in the Pointe Coupee Parish office with this PRM Plan attached. After

filing, a copy of the recorded conservation servitude, clearly showing the book, page and date of filing, will be provided to US Army Corps of Engineers, New Orleans District (CEMVN).

The Holder shall be either a governmental body empowered to hold an interest in immovable property under the laws of the State of Louisiana or the United States of America; or a non-profit corporation organized pursuant to Louisiana's Non-Profit Corporation Law, Title 12, Sections 201-269 of the Louisiana Revised Statues, the purposes or powers of which include retaining or protecting the natural, scenic, or open-space values of immovable property; assuring the availability of immovable property for agricultural, forest, recreational of open-space use; protecting natural resources; maintaining or enhancing air or water quality; or preserving the historical, archaeological or cultural aspects of unimproved immovable property. Upon execution of the conservation servitude previously described, the Holder shall hold and enforce the conservation servitude placed on the Property and the Property shall be protected in perpetuity.

A. Uses Prohibited by the Conservation Servitude: No activities that result in the material degradation of habitat within the Property shall occur unless written authorization is obtained. Prohibited uses include but are not limited to:

a. Construct any structure or structures on said Property;

b. Cut, burn, remove or destruct vegetation (including trees) on said Property except in accordance with a CEMVN approved plan for controlling invasive species;

c. Build or allow to be built or developed roads, trails or paths on said Property except as authorized by CEMVN;

d. Partition the Property with fencing without authorization from CEMVN;

e. Construction of perimeter or boundary fencing designed to impede the movement of terrestrial wildlife to and from the property from adjacent forested or other undeveloped property or designed to contain terrestrial wildlife within the Property without authorization by the CEMVN.

f. Change the elevation of or contours (excavate or deposit dredged material) of said Property except in accordance with the MWP or under an approved adaptive management plan;

g. Allow pumping, draining or causing said Property to be drained in any way;

h. Place, fill, store, or dump refuse, trash, vehicle bodies or parts, rubbish, debris, junk, waste, or other such items on the Property;

i. Allow land clearing or deposition of soil, shell, rock or other fill on the Property without written authorization from CEMVN;

j. Allow grazing of cattle or other domestic livestock on the Property.

k. Allow other commercial, industrial, agricultural or residential uses of the Property without written authorization from CEMVN; or,

l. Allow any other activities, which are inconsistent with the establishment, maintenance and protection of the Property as identified in Sections VII and VIII.

B. Allowed Uses. The Owner/Contractor shall not use or authorize the use of areas within the Property for any purpose that interferes with its conservation purposes other than those specified below:

a. Monitoring of vegetation, soils and water;

b. Maintenance of wetlands, pre-existing trails, bridges, berms, dams, outlet and spillway structures, and other appurtenant facilities as identified Section VII;

c. Hunting, fishing, trapping and non-consumptive recreational uses (i.e., hiking, bird watching, etc.);

d. Ecological education that does not require destruction or injury to any trees, ground areas, etc;

e. Compliance with federal regulations or appropriate court orders;

f. Activities identified in Sections VII and VIII necessary to implement and maintain the development of the Property;

g. Any activity that has received authorization from CEMVN through a DA permit or other written authorization. It is understood that the construction, operation and abandonment of any authorized activity must be done in such a manner that minimizes direct, secondary and cumulative adverse impacts to the Property. Upon abandonment, the site will be restored to pre-project elevations and planted with a mixture of appropriate wetland species.

h. The conservation servitude does not prohibit the exploration and production of minerals but requires that the applicant must first demonstrate, prior to authorization of any work, that the activity minimizes adverse impacts and will be conducted in accordance with all applicable laws and regulations. The applicant shall;

1) Provide a detailed discussion of alternative drilling sites and routes considered and reasons why a less environmentally damaging alternative was not selected.

2) Show all structures including roads, pipelines and production facilities required to support the activity.

3) Provide a mitigation plan that fully compensates for lost functions at the Property.

4) Provide a site restoration plan with the application.

The Contractor (or Long-Term Steward)/Owner, or its heirs, assigns or purchasers shall be responsible for protecting lands contained within the mitigation area in perpetuity, unless the lands are transferred or sold to a state or federal resource agency or non-profit conservation organization. The conservation servitude shall incorporate the PRM Plan by reference and bind Contractor (or Long-Term Steward)/owner, its heirs, assigns, and future owners to complying with the terms of this copy of the mitigation plan.

VI. Baseline Information

A wetland delineation field study was conducted in September of 2010. The investigation revealed that the area selected for restoration was designated as "prior-converted" by the NRCS. Soils with hydric indicators were documented throughout the property. A wetland data report was submitted to the CEMVN on September 28, 2010 and a preliminary jurisdictional determination was issued on December 15, 2010 with the account number MVN-2010-02419-SY (Appendix E). Light detection and ranging data (LIDAR) reflects a topographic range of approximately 36 to 47 feet North American Vertical Datum (NAVD) across the project area (Figure 4, Attachment A). This site represents an alluvial floodplain associated with the Mississippi River that is no longer active due to the extensive levee system.

A. Land Use

1. **Historical Land Use:** The Property was historically a bottomland hardwood forest underlain by hydric soils typical of those associated with the lower natural levee to backswamp areas of the Mississippi River floodplain. The site, in its entirety, is currently under a crop rotation of soybeans, wheat, and corn. A majority of this area was cleared and converted to crop production some time before 1941 as evidenced from temporal aerial sequence (Figures 5 to 11, Attachment A). Other areas currently in production were sporadically cleared between 1941 and 1966.

2. **Current Land Use:** The Property is primarily used for agricultural production and consists of wheat, soybean, and corn fields. There are over 476 acres of existing forested wetlands and emergent freshwater marsh located southwest of and immediately adjacent to the project area (Figure 12, Attachment A).

B. Soils

The soils within the Property are mapped by the NRCS (2010[2]) as Commerce siltly clay loam (Cm), Commerce silty clay loam, gently undulating (Co), Fausse clay, frequently flooded (Fa), Mhoon silt loam (Mh) and Sharkey clay (Sf) (Figure 13, Attachment A). Approximately 60% of the soils within the project are mapped as hydric by the NRCS (2010[3]). Although the Commerce Series soils included in the project area are listed as non-hydric by the NRCS, all soil samples taken within the Property during the field investigation contained indicators of hydric soils such as hydric characteristics such as redoximorphic features of a depleted matrix with iron accumulations in all samples.

C. Hydrology

1. **Historical Drainage Patterns:** Historically, surface water on the site was from overland flooding of the Mississippi River and tributaries such as Bayou Lettsworth and Bayou Moreau as well as precipitation. As flooding receded, surface water on the site would reenter Bayous Lettsworth and Moreau and eventually the Mississippi River channel. This water then flowed south toward the Gulf of Mexico. Natural hydrology was disrupted when the Mississippi River Levee System was put in place to prevent overland flooding. In order to expedite the removal of any remaining surface water on site, an extensive drainage system was installed by previous landowner so as to accommodate agricultural land use.

2. **Existing Drainage Patterns:** The existing on-site hydrology is typical of a maintained agricultural area. There are a number of drainage channels, along with subsequent cross drains, that traverse the property. This ditching system is designed to carry surface water to the north and west into the adjacent forested wetland area and Round Lake. The primary source of surface water on the site is precipitation, but onsite hydrology can be potentially influenced by water levels in Round Lake and the adjacent forested area (Figure 14, Attachment A).

D. Vegetation

1. **Historical Plant Community:** the Property most likely displayed a species composition typical of a bottomland hardwood forest occurring within an alluvial floodplain. This is evidenced by species present in the adjacent wetland forested areas. These species include sugarberry, water oak (*Quercus nigra*), live oak (*Quercus*

virginiana), American elm, green ash (*Fraxinus pennsylvanica*), baldcyress (*Taxodium distichum*), and sweetgum.

2. **Existing Vegetative Community:** The vegetation on the Property is currently comprised of agricultural crops such as corn (*Zea mays*), soybeans (*Glycine max*), and wheat (*Triticum* sp.).

VII. Mitigation Work Plan

The Contractor will restore wetland functions and values by removing agricultural operations, restoring natural surface hydrology and surface elevations, and planting appropriate bottomland hardwood tree species. Considering the fact that the primary source of surface water for the proposed mitigation area is precipitation, none of the proposed hydrology improvements have the potential to reduce the amount of surface water available within the project area. Also, due to the nature of the soil work associated with hydrologic restoration, the Contractor does not foresee any adverse impacts to surrounding lands or offsite drainage.

A. Hydrology Restoration

Hydrologic restoration will be accomplished by backfilling and grading a number of artificial drainages and returning any lateral drains to their natural elevations (36-41 feet NAVD) to the extent practical.

Approximately 11,460 feet of artificial drains will be actively returned to natural grade to the extent practical in order to facilitate sheet flow. This will be accomplished using approximately 11,764 cubic yards of earthen fill from adjacent banks and any elevated roads created in association with crop production.

The continued presence of an adjacent drainage system associated with farmlands was thoroughly considered when developing the hydrologic restoration plan. The Contractor does not foresee any adverse impacts resulting from the continued existence and operation of the neighboring farm.

There are no hydrologic disturbances outside of the mitigation site that would adversely affect successful establishment of a sheet flow hydrologic regime over which the Contractor has no control. The proposed hydrology work, including site preparation, will be completed in its entirety before the initiation of the proposed vegetative plantings. (Figures 15 to 19, Attachment A) depicts the hydrology restoration plan. The anticipated schedule for commencement of these activities is the summer of 2011.

B. Restoration of Plant Community

The Contractor will restore the original wetland vegetation by preparing the site and conducting plantings within the restoration areas. The plantings will be conducted

during the first planting season of December 15-March 15. The site will first be prepared by mowing, grading, herbicide, etc following by ripping to a depth of approximately 18 inches (Allen et al 2001). Appropriate seedlings of mixed bottomland hardwood species will then be planted at approximately nine x nine-foot centers which is 538 stems per acre. Hard mast species shall not account for less than 50% or more than 70% of the planted seedlings. These plantings accompanied by the hydrology improvements outlined above should restore any wetland functions and values present before the conversion of this site. The following species will be planted with the number of species to be determined by the commercial availability of such species and quantity available from commercial nurseries.

Hard Mast (approximately 50 to 70%)

Common Name	Scientific Name
Bitter Pecan	*Carya x lecontei*
Nuttal Oak	*Quercus nuttalli*
Overcup Oak	*Quercus lyrata*
Sweet Pecan	*Carya illinoensis*
Water Oak	*Quercus nigra*
Willow Oak	*Quercus phellos*
Water Hickory	*Carya aquatica*

Soft Mast (approximately 30-50%)

Common Name	Scientific Name
American Elm	*Ulmus americana*
Common Persimmon	*Diospyros virginiana*
Drummond Red Maple	*Acer rubrum* var. *drummundii*
Green Ash	*Fraxinus pennsylvanica*
Mayhaw	*Crataegus opaca*
Sugarberry	*Celtis leavigata*
Sweetgum	*Liquidambar styraciflua*
Willow Oak	*Quercus phellos*

The Contractor realizes that control/elimination of any exotic species present in the area is crucial to the successful re-establishment of bottomland hardwoods on the site; however, we do not foresee any complications associated with non-indigenous species that would hinder restoration. The anticipated schedule for commencement of planting activities is January 2012.

VIII. Maintenance Plan

A. General

The site will be monitored and maintained by the Contractor/ Long-Term Steward. Through contractual agreement with the Permittee, the Contractor will commit to restore/enhance/preserve wetland functions and values, and maintain wetland habitats in accordance with the provisions of this plan.

The CEMVN agrees to provide appropriate oversight in carrying out provisions of this plan. They also agree to review and provide comments on all project plans, annual monitoring reports, contingency plans, and necessary permits for the mitigation area. The CEMVN will also review and confirm reports on evaluation of success criteria.

B. Forest Management

Upon or after crown closure, timber harvesting/thinning will only be approved if the CEMVN determines that such activities are needed to maintain or enhance the ecological value of the site and shall be performed by the Contractor/Long-Term Steward. Measures to control the encroachment of exotic/invasive vegetation after the thinning operation shall be implemented as needed.

C. Long -term Funding

The Contractor anticipates that the annual cost of long-term management following achievement of the long-term success criteria is $1,444.25. To ensure that sufficient funds are available for the perpetual maintenance of the project, the Contractor shall provide additional funds to the Round Lake Fund described in Section XI. These funds shall comprise the "Long-Term Maintenance and Protection" portion of the account. The account will be initially funded at a level of $30,953.16 utilizing the initial release of Construction funds as described in Section XI. Utilizing an interest rate of 3.11%, the account shall contain a minimum balance of $47,558.08 plus one year of annual long-term maintenance cost ($1,444.25) totaling $49,002.33 by the time the long-term success criteria is achieved at approximately Year 15 (per Section 10.A.3). From this point, Year 16 annual long-term maintenance cost will be deducted bringing the total of the escrow account to $47,558.08. At this time, any accrued interest shall be used in the operation, maintenance or other purpose that directly benefits the Property. Only the interest accumulated may be withdrawn for this purpose. The principal shall not be used and shall remain as part of the Property's assets to ensure sufficient funds are available should perpetual maintenance responsibilities be assumed by a third party. At the end of every five year period the Contractor shall calibrate the escrow account to $49,002.33 plus one year annual long-term maintenance cost. The Contractor or a Long-term Steward may withdraw the accumulated interest only with written approval from the CEMVN. The Contractor shall provide copies of account statements to the CEMVN upon request.

IX. Performance Standards

A. Initial Success Criteria

1. Hydrology: Ground surface elevations must be conducive to the establishment and support of hydrophytic vegetation, and re-establishment and maintenance of hydric soil characteristics. To that end, all alterations of the natural topography (ditching, spoil banks, land leveling, bedding, fire breaks, etc.) that have affected the duration and extent of surface water have been removed or otherwise rendered ineffective in accordance with Section VII.

2. Vegetation: A minimum of 250 planted seedlings per acre must survive through the end of the second spring following the planting (i.e., Year 1). Those surviving seedlings must be representative both in species composition and percentage identified in Section VII. This criterion will apply to initial plantings, as well as, any subsequent replanting that may be needed to meet this requirement.

B. Interim Success Criteria

1. Hydrology: By Year 3, two years following attainment of the one-year survivorship criteria, site hydrology will be restored such that the Property meets the wetland criterion as described in the 1987 Manual. Data demonstrating that wetland hydrology has been re-established is to be collected by the Contractor and submitted to CEMVN in the monitoring report for the interim success criteria.

2. Vegetation and Vegetative Plantings

a. For a given planting, a minimum of 250 seedlings/saplings per acre must be present at the end of the fourth year (i.e., Year 5) following successful attainment of the one-year survivorship criteria. Trees established through natural recruitment may be included in this tally; however, no less than 125 hard mast-producing seedlings per acre must be present. Surviving hard mast seedlings must be representative of the species composition and percentage identified in Section VII. Exotic and/or invasive species may not be included in this tally.

b. By Year 5, four years following successful attainment of the one-year survivorship criteria, the Property and the perimeter will be virtually free (approximately 5% or less on an acre-by-acre basis) of exotic/invasive vegetation.

c. Developing plant community must exhibit characteristics and diversity indicative of a viable native forested wetland community commensurate with stand age and site conditions by Year 5. Achievement of wetland vegetation dominance is defined as a vegetation community where more than 50% of all dominant species are facultative ("FAC") or wetter, excluding FAC- plants, using "routine delineation methods" as described in the 1987 Manual.

C. Long-term Success Criteria

1. Forest canopy coverage exceeds eighty percent of forested land mass as measured by an approved method. Forest canopy species abundance and composition is consistent with the restoration goals identified in the restoration plan and credit assessment methodologies.

2. When forest canopy coverage exceeds eighty percent, the mitigation area will be essentially void of exotic/invasive vegetation (all seed-producing trees removed from the site and site perimeter and less than 1% of the understory on an acre per acre basis). An active treatment program will continue as part of the long-term maintenance program.

3. If thinning to maintain or enhance the ecological value of the site is determined necessary by the CEMVN at this time, the Contractor/Steward will develop a thinning plan in coordination with the CEMVN. Thinning operations will be performed by the Contractor/Steward.

4. The Contractor will provide documentation that the "Long-Term Maintenance and Protection" escrow account is fully funded.

X. Monitoring and Reporting Protocols

A. Monitoring

The Contractor agrees to perform all work necessary to monitor the site to demonstrate compliance with the success criteria established in Section IX. The Contractor will monitor the site in the spring of each monitoring year using the following guidelines:

1. Permanent Monitoring Stations

a. Immediately following initial planting of the mitigation area, the Contractor will randomly establish a permanent circular monitoring station for every 20 acres within the mitigation area. Each station will have a minimum area of $1/20^{th}$ acre (radius = 26 feet). Stations will be identified with a permanent marker (e.g., an 8-foot PVC pipe anchored with a metal T post at plot center) and GPS coordinates will be recorded. A map depicting the location of the monitoring stations and a listing of the station coordinates is to be provided to CEMVN. All planted seedlings/saplings falling within each monitoring station will be marked with a numbered tag uniquely identifying that stem. The Contractor will document the number, species, height and diameters of tagged stems within each monitoring station immediately following initial planting.

b. Surveys of the permanent monitoring stations will occur immediately following vegetative plantings to establish baseline and then in year 1, 3, and

5. However, if monitoring for any given year determines that the site is not progressing as expected, monitoring will continue on an annual basis until it successfully meets or exceeds established milestones. After achieving the interim success criteria, monitoring will occur every 3 years until an average canopy coverage of 80% is obtained. If thinning is required after successfully achieving the long-term success criteria, the site will be surveyed prior to and following the first thinning operation following plantings.

c. The survey of the permanent monitoring stations will collect data to evaluate the survival rate of planted vegetation; number, species and growth rates (average heights and diameter). In addition to planted seedlings, surveys will include the number by species of volunteering trees, shrubs and woody vines. Surveys will also collect information regarding other colonizing plant species, the wetland plant status (scaled from obligate (OBL) to upland (UPL)) of each and the number by species of exotic/noxious species.

2. **Transects.** The Contractor shall establish transects along planted rows to be used to determine overall survivorship of planted seedlings. Transect shall make up approximately 3% of the total number of rows and arranged so that a representative sample of the entire track is obtained. The beginning and ending points of each transect shall be marked with a permanent marker (e.g., an 8-foot PVC pipe anchored with a metal T post) and GPS coordinates recorded. Transects will be surveyed to determine the number by species of planted seedlings within 60 days of planting to establish baseline information. Transects will be surveyed through successfully meeting the interim success criteria. Initial and interim transect surveys shall record the number by species of living seedlings, describe the general condition of the seedlings, and note size of any failed planting areas and provide possible reasons for planting failures.

3. The Contractor will collect data on hydrologic conditions as necessary to document evidence of wetland hydrology. Documentation will include descriptions of the upper 12 inches of the soil profile sufficient to demonstrate hydric properties.

4. The Contractor will complete a comprehensive floristic survey as part of the monitoring requirements to document attainment of the long-term success criteria.

B. Reporting Protocols

1. **As-Built Report:** An as-built report will be submitted to CEMVN within 60 days following completion of all the work required to restore or enhance special aquatic sites. The as-built report will describe in detail the work performed and provide a list of species planted and the number of each species. No deviation from the Mitigation Work Plan (MWP) described in Section VII may occur without prior approval from the CEMVN. The as-built report will include a discussion of the coordination with the CEMVN, a description of and reasons for any approved deviation. The as-built report shall provide:

a. A survey showing finished grades and plantings.

b. Survey data collected from the permanent monitoring stations and the transects.

2. Monitoring Reports: The Contractor will submit reports documenting monitoring efforts to the CEMVN by July 1 of the year monitoring occurs. Besides monitoring results for that monitoring year, reports will include a financial assurance report documenting withdrawals and deposits. The monitoring reports will follow the guidelines outlined here:

a. The monitoring report will include data sufficient for comparison to the performance standards found in Section VII. The Contractor should also include discussion of all activities which took place at the site. At a minimum, monitoring reports also include the following:

1) Digital images taken from ground level at each monitoring station and from elevated positions throughout the site to document overall conditions,

2) A description of the general condition of the seedlings, including the number and species of surviving seedlings in each monitoring station, the tag number and a discussion of likely causes for mortality,

3) A description of vegetative communities developing at each monitoring station,

4) A description of the generalized degree and distribution of exotic/invasive species and whether they are seed bearing trees or seedlings,

5) Identify measures to eradicate exotic/invasive species and document results of these efforts,

6) A general discussion of hydrologic conditions at monitoring stations, (documentation will include a wetland delineation approved by the CEMVN if previously determined to be a non-wetland).

7) A description of the condition of any applicable hydrology altering features (culverts, ditches, plugs, etc.), and

8) A description of wildlife usage at each monitoring station, including any herbivory problems if applicable.

b. Financial Information. The Contractor will provide copies of deposits and account statements for all financial assurance accounts associated with the Property and for the Long-term Maintenance and Protection Fund. If any escrowed funds

were used, the Contractor will include a narrative describing that use and supporting documentation (e.g., receipts).

XI. Financial Assurances

The purpose of the financial assurances is to ensure that sufficient funds are available for performance of the ecological restoration of the mitigation project and to provide a source of funding for the perpetual maintenance of the Property. To accomplish these goals, sufficient funds to perform the restoration work will be deposited in an escrow account (the Round Lake Fund) which will be administered by a federally-insured depository that is "well capitalized" or "adequately capitalized" as defined in Section 38 of the Federal Deposit Insurance Act .

The Contractor will deposit $99,577.62 in the Round Lake Fund to cover costs associated with "Construction and Establishment". The Construction portion of the account is $75,254.70 and the Establishment portion of the account is $24,322.92. As milestones are released, the money will be released back to the Contractor in accordance with the following.

A. Upon verification by the CEMVN that the initial success criteria has been achieved, the CEMVN shall advise the financial institution to release to the Contractor $75,657.90 (i.e. 100% of construction portion or Year 0 costs).

B. Upon verification by the CEMVN that the initial success criteria has been achieved, the CEMVN shall advise the financial institution to release to the Contractor $4,153.91 (i.e. Year 1 Costs).

C. Upon verification by the CEMVN that the interim hydrology success criteria has been achieved, the CEMVN shall advise the financial institution to release to the Contractor $6,690.86 (i.e. Year 2 and 3 Costs).

D. Upon verification by the CEMVN that the interim vegetative planting success criteria has been achieved, the CEMVN shall advise the financial institution to release to the Contractor $4,320.40 (i.e. Year 4 and 5 Costs).

E. When canopy closure has been achieved (approximately Year 15) and the CEMVN concurs that exotic/invasive vegetation encroachment has been sufficiently controlled, the remaining funds associated with the "Construction and Establishment" portion of the Round Lake Fund shall be released to the Contractor or to the long-term steward, if the Contractor has designated one (i.e. Year 6 through 15 Costs)

XII. Adaptive Management Plan

An adaptive management strategy, contingency, and remedial responsibilities shall be in place, and will be implemented in the event monitoring reveals that certain success criteria have not been met. In the event of a deficiency, the Contractor shall

provide a notice to the CEMVN. This notice shall include an explanation for the deficiency, and will outline specific practices and measures that will guide decisions for revising compensatory mitigation plans if needed.

Examples of possible adaptive management strategies and contingences are listed below:

A. Seedling Survivorship

1. If survival is less than 250 trees per acre as determined by sampling or by observing high mortality at any location within the planted areas, or target species ratios are not met, the Contractor shall take appropriate actions, as recommended by the CEMVN, to address the causes of mortality and shall replace all dead seedlings with new seedlings of the appropriate species during the following planting season. Replanting, monitoring and reporting, as previously described, shall occur as needed to achieve and document the required one-year survival rate.

2. If the survival criterion is not met after three unsuccessful attempts, the CEMVN will convene a meeting with the Contractor to decide if replanting should continue. Should the CEMVN determine that achieving the required survival rate would not be likely; the Contractor shall be required to provide replacement mitigation for the increment of value that did not accrue within the unsuccessful areas within one year of this decision.

3. Year 5 monitoring shall verify seedling composition and survivorship goals established in Section IX. The Contractor shall implement remedial action, as deemed necessary by the CEMVN, to ensure attainment of Year 5 survivorship and composition criteria.

B. Contingencies for Hydrology

If wetland hydrology is not documented by Year 5, the CEMVN shall document in the monitoring report those areas where attention is needed. The CEMVN may require the Contractor to conduct adaptive management measures in order to obtain adequate hydrology. With approval of the CEMVN, the Contractor would establish a means of increasing the amount of available water to the site.

C. Catastrophic Events

Catastrophic events are defined here as a natural or human-caused event over which the Contractor has no control to prevent the damage from occurring. Examples of Natural Disasters includes, but are not limited to, a flood equal to or greater in magnitude than the 100-year flood event, earthquake, drought, debilitating disease, wildfire, depredation, regional pest infestation, or fluviomorphic change. A human-caused catastrophic event includes, but is not limited to, war, insurrection, riot, or other civil disorders, spill of a hazardous or toxic substance, or fire. A deliberate and unlawful act

includes, but is not limited to, the dumping of a hazardous or toxic substance, or fire. A deliberate and unlawful act includes, but is not limited to, the dumping of a hazardous or toxic substance, as well as significant acts of vandalism or arson.

Following an event determined to be a Catastrophic Event by the CEMVN, the Contractor, in consultation with the CEMVN, shall identify the severity of the impacts and determine if measures necessary to remediate such impacts to the Property will be necessary. The Contractor will be required to implement the adaptive management measures and remediate identified impacts within one year of the event. Subsequent adaptive management measures may be necessary following the conclusion of the remediation activities in consultation with the CEMVN.

The Contractor shall bear the financial responsibility for any and all remedial measures necessary to correct any deficiency caused by any means prior to successful attainment and verification of all Interim Success Criteria by the CEMVN. Interest accumulated in the Round Lake Fund may be used by the Contractor, the Long-Term Steward or Holder to defray expenses associated with the remedial actions necessary.

XIII. Citations

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Natural Resources Conservation Service (NRCS). 2010[3]. National Hydric Soils List by State (February 2010). Available URL http://soils.usda.gov/use/hydric/lists/state.html , Accessed 24 August 2010.